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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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EXAMINER	
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ART UNIT	**PAPER NUMBER**
2633	17

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.	Applicant(s)
08/923,461	Viet Le et al.
Examiner	**Art Unit**
Mohammad Sedighian	2633

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *Mar 21, 2001* .

2a) ☐ This action is **FINAL.** 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-40* is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-40* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☒ Notice of References Cited (PTO-892)
16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
18) ☐ Interview Summary (PTO-413) Paper No(s). _____
19) ☐ Notice of Informal Patent Application (PTO-152)
20) ☐ Other:

1. This communication is responsive to applicant's 03/21/2001 amendment in the application of Viet Le et al. for "Method and System for Modulator Multiplexing and Amplification in a Multi-Channel Plan", filed 09/04/1997. The amendment to the claim have been entered. Claims 1-40 are now pending.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

3. Claims 1, 8, 9, 14, 27, and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by Chraplyvy et al. (US Patent No: 5,546,210).

Regarding claims 1, 8, 9, 14, 27 and 35, Chraplyvy discloses a system for amplifying optical signals (col. 1, lines 9-10, col. 10, lines 11-25 and fig. 2) in a set of multiple channels (col. 7, line 62) in an operating window (col. 7, lines 62-65) of a fiber communication network (col. 1, lines 9-10), comprising: a plurality of subwindows (λ_1-λ_4 and λ_5-λ_8, fig. 2) within the operating window (λ_1-λ_8, fig. 2); a first and a second multiplexing unit (30, 31, fig. 2) configured to multiplex the optical signals in the set of multiple channels into a plurality of subgroups of optical signals (col. 7, lines 65-67), each subgroup associated with one of the plurality of subwindows

(λ_1-λ_4 and λ_5-λ_8 fig. 2) such that each subwindow corresponds to and is associated with a different group of channels (λ_1, λ_2, λ_3, λ_4, fig. 2) within the operating window (λ_1-λ_8, fig. 2); and a plurality of optical line amplifiers (33, 34, fig. 2) are configured to amplify a subgroups of optical signals associated with different subwindows (λ_1-λ_4 and λ_5-λ_8 fig. 2) within the operating window (λ_1-λ_8, fig. 2). As to claims 9, 27 and 35, Chraplyvy further discloses first (32, fig. 2) and second (30, 31, fig. 2) wavlength division multiplexing units (col. 7, lines 65-67), wherein the first and second wavelength division multiplexing units each comprise a coarse WDM unit (32, fig. 2) and a fine WDM unit (30, 31, fig. 2), and optical line amplifiers (33, 34, fig. 2) associated with each fine WDM units.

4. Claims 29-34 are rejected under 35 U.S.C. 102(e) as being anticipated by Clark (US Patent No: 6,041,152).

Regarding claim 29, Clark discloses a WDM system (fig. 1) for multiplexing optical signals in a set of multiple channels (col. 1, lines 1-10) within an operating window (col. 3, lines 65-67, col. 4, lines 1-3), comprising: a coarse wavelength division multiplexing/demultiplexing unit (1, fig. 1), and a fine wavelength division multiplexing/demultiplexing unit (4, 6, fig. 1), wherein the coarse WDM unit multiplexes (1, 2, fig. 1) the optical signals into subgroups of optical signals in corresponding subwindow (col. 3, lines 55-58, 63-64 and fig. 1), and the fine WDM unit (6, 7, fig. 1) multiplexes the optical signals within a respective subgroup of optical signals into individual channels (col. 4, lines 2-3).

Regarding claims 30-31, Clark further discloses the coarse WDM unit (1, fig. 1) multiplexing the optical signals into first (1530.08-1535.29, fig. 1), second (1537.94-1543.19, fig. 1), third (1547.97-1552.77, fig. 1), and fourth subwindows (1555.50-1560.86, fig. 1).

Regarding claim 32, Clark further discloses operating window comprises sixteen channels (col. 3, lines 20-25), and the first, second, third, and forth groups of channels each have four channels (17, 18, 19, 20, fig. 2A and 26, 27, 28, 29, fig. 2B).

Regarding claim 33, Clark further discloses four fine WDM units (4, 5, 6, 7, fig. 1) that multiplex the optical signals in a first (1530.08-1535.29, fig. 1 and figs. 2A, 2B) to four (1555.50-1560.86, fig. 1 and figs. 2A, 2B) subwindows.

Regarding claim 34, Clark discloses a first coarse WDM multiplex/demultiplex unit (col. 3, lines 54-57 and 1, fig. 1), and a first (4, fig. 1), a second (5, fig. 1), a third (6, fig. 1), and a fourth (7, fig. 1) fine WDM multiplex/demultiplex units for multiplexing a first (1530.08-1535.29, fig. 1), a second (1537.94-1543.19, fig. 1), a third (1547.97-1552.77, fig. 1), and a fourth subgroups of optical signals (1555.50-1560.86, fig. 1).

5. Claims 29-30, and 34 are rejected under 35 U.S.C. 102(e) as being anticipated by Pan et al. (US Patent No: 5,748,350).

Regarding claim 29, Pan discloses a WDM system (figs. 9, 10) for multiplexing optical signals in a set of multiple channels (λ_1-λ_8, fig. 9) within an operating window (col. 1, lines 44-50), comprising: a coarse wavelength division multiplexing/demultiplexing unit (103, 106, 107,

fig. 9 and 153, 156, fig. 10A), and a fine wavelength division multiplexing/demultiplexing unit (104, 105, fig. 9 and 154, fig. 10A), wherein the coarse WDM unit multiplexes the optical signals (λ_1-λ_8, fig. 9) into subgroups of optical signals (101, 102, fig. 9) in corresponding subwindow (col. 9, lines 40-52 and 106, 107, fig. 9) within an operating window (col. 9, lines 53-67, col. 10, lines 1-5, col. 10, lines 35-65), and the fine WDM unit (col. 9, lines 16-28, col. 10, lines 5-7 and 104, 105, fig. 9) multiplexes the optical signals within a respective subgroup of optical signals into individual channels (col. 10, lines 5-10 and λ_1, λ_3, λ_5, λ_7, fig. 9).

Regarding claim 30, Pan discloses the coarse WDM unit (153, 156, fig. 10A) multiplexing the optical signals into first, second, third, and fourth subwindows (col. 10, lines 2-9 and fig. 10A).

Regarding claim 34, Pan discloses a first coarse WDM multiplex/demultiplex unit (153, 156, fig. 10A), and a first (154_1, fig. 10A), a second (154_2, fig. 10A), a third (154_3, fig. 10A), and a fourth (154_n, fig. 10A) fine WDM multiplex/demultiplex units for multiplexing a first, a second, a third, and a fourth subgroups of optical signals (col. 10, lines 3-10).

6. Claims 29-30, 32, 34-36, 38 and 40 are rejected under 35 U.S.C. 102(e) as being anticipated by Otsuka et al. (US Patent No: 5,841,557).

Regarding claims 29 and 35, Otsuka discloses a WDM system (fig. 15) for multiplexing optical signals in a set of multiple channels (ch.1 to ch.2i(p), fig. 15) within an operating window (odd and even numbered channels, fig. 15), comprising: a coarse (13-7, fig. 15), and a fine (13-5,

fig. 15) WDM units, wherein the coarse WDM unit (13-7, fig. 15) multiplexes the optical signals into subgroups of optical signals (p1, p2, fig. 15) in corresponding subwindow (odd numbered channels, fig. 15) within an operating window (odd and even numbered channels, fig. 15), and the fine WDM unit (13-5, fig. 15) multiplexes the optical signals within a respective subgroup of optical signals (12N-1, 12p-1 and 12w-(2i-1), 12p-(2i-1), fig. 15) into individual channels (p1, fig. 15) within a corresponding subwindow (odd numbered channels, fig. 15).

Regarding claims 30 and 36, Otsuka discloses multiplexing in first, second, third, and fourth subgroups (col. 13, lines 20-23, 42-45 and fig. 7) in corresponding a first subwindow that includes a first group of channels (ch.1, ch.5, ch.4i-3, fig. 7 and fig. 15), a second subwindow that includes a second group of channels (ch.3, ch. 7, ch 4i-1, fig. 7 and fig. 15), a third subwindow that includes a third group of channels (ch.2, ch.6, ch.4i-2, fig. 7 and fig. 15), and a fourth subwindow that includes a fourth group of channels (ch.4, ch.8, ch.4i, fig. 7 and fig. 15).

Regarding claims 32 and 38, Otsuka discloses multiple channels in the operating window comprises sixteen channels (col. 3, lines 19-20 and ch.1 to ch.16 in fig. 7), and the first, second, third, and forth groups of channels each have four channels (ch.1, ch.5, ch.9, ch.4i-3, fig. 7).

Regarding claims 34 and 40, Otsuka discloses the coarse WDM unit (16, fig. 24) to multiplex the optical signals into first, second, third and fourth subgroups (fig. 24), and the fine wavelength WDM unit comprises first (13-1, fig. 24), second (13-2, fig. 24), third (13-3, fig. 24), and fourth (13-M, fig. 24) fine WDM units.

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1, 7-10, 14, 16, 20 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Otsuka et al. (US Patent No: 5,841,557) in view of Chraplyvy et al. (US patent No: 5,907,420).

Regarding claims 1 and 14, Otsuka discloses a system for amplifying (18w, fig. 15) optical signals in a set of multiple channels (ch.1(w) to ch.2i(p), fig. 15) in an operating window (odd and even numbered channels, fig. 15) of a fiber communication network (col. 1, lines 16-19), comprising: a plurality of subwindows (12N-1 to 12w-(2i-1) and 12w-2 to 12p-2i, fig. 15); a first multiplexing unit (13-1, 13-2, fig. 15) to multiplex the optical signals (col. 9, lines 13-15 and 12N-1, 12p-1, fig. 15) in the set of multiple channels (ch.1(w), ch.1(p), fig. 15) into a plurality of subgroups of optical signals (col. 9, lines 10-13 and 13-1, 13-2, 13-3, 13-4, fig. 15), wherein each subgroup (12N-1, 12p-1, 13-1, fig. 15) is associated with one of the plurality of subwindows (odd numbered channels, fig. 15) such that each subwindow corresponds to and is associated with a different group of channels (ch.1(w) to ch.2i-1(p), fig. 15) within the operating window (odd and even numbered channels, fig. 15). Otsuka differs from the claimed invention in that Otsuka does not disclose a plurality of optical line amplifiers to amplify subgroups of optical signals associated with different subwindows. However, Chraplyvy, from the same field of endeavor, discloses an

optical communication system (col. 5, lines 20-54 and fig. 2), wherein a plurality of optical line amplifiers (col. 1, line 29 and EDFAs, fig. 2) are configured to amplify subgroups of optical signals (λ_6, λ_7, and λ_1, λ_2, λ_3, λ_5, λ_8, fig. 2) associated with different subwindows (λ_6 to λ_7, fig. 2) within an operating window (λ_1 to λ_8, fig. 2). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to incorporate optical line amplifiers such as the ones in the communication system of Chraplyvy for line amplifications in each subgroup of optical signals in the communication system of Otsuka in order to amplify optical signals of different wavelengths within different subgroups for further transmission and reception.

Regarding claims 7-8, 20 and 27, Otsuka discloses a first coarse WDM unit (13-7, fig. 15 and 16, fig. 24) for multiplexing the optical signals in the set of multiple channels (12-1, 12-2, 12-I, fig. 24) into first, second, third, and forth subgroups (G1, G2, G3, G4, fig. 24), and first, second, third, and fourth fine WDM units (13-1, 13-2, 13-3, 13-4, fig. 24) for carrying optical signals having different wavelengths (col. 23, lines 44-48), and fiber optics coupling links (col. 1, line 40). As to optical line amplifiers that are coupled to the fine WDM units, Chraplyvy discloses optical line amplifiers (EDFAs, fig. 2) that are connected to optical multiplexers to further amplify a subgroup of optical signals, as discussed above in claim 1. Therefore, it would have been obvious to incorporate optical line amplifiers that are coupled to optical fibers and to multiplexers, such as the ones of Chraplyvy for line amplifications of each subgroups of optical signals in the system of Otsuka to amplify the optical signals after they first multiplexed. As to claim 8, Otsuka

discloses a second multiplexing unit (13-5, 13-7, figs. 7, 15), and optical fibers (P1, fig. 15) between the WDM units.

Regarding claim 9, Otsuka discloses the first multiplexing unit comprises a coarse WDM unit (col. 33, lines 29-34) and the fine WDM unit (col. 33, lines 13-15) can be added to the system in a modular fashion (fig. 7).

Regarding claim 10, Otsuka further discloses zero-dispersion shifted optical fiber for the transmission line (col. 2, lines 65-67, col. 3, lines 1-3).

Regarding claim 16, Otsuka discloses first subwindow includes a first group of channels (ch.1, ch.5, ch.4i-3, fig. 7 and fig. 15), the second subwindow includes a second group of channels (ch.3, ch. 7, ch 4i-1, fig. 7 and fig. 15), the third subwindow includes a third group of channels (ch.2, ch.6, ch.4i-2, fig. 7 and fig. 15), and the fourth subwindow includes a fourth group of channels (ch.4, ch.8, ch.4i, fig. 7 and fig. 15)..

9. Claims 31-33 and 37-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Otsuka et al. (US Patent No: 5,841,557) in view of Meli et al. (US Patent No: 5,946,117).

Regarding claims 31 and 37, Otsuka differs from the claimed invention in that Otsuka does not disclose an operating window that comprises an erbium band of wavelengths between approximately 1530 nm and 1560 nm. However, Meli, from the same field of endeavor, discloses an optical transmission system (fig. 14) comprised of a plurality of optical sources (28a, 28b, 28c, 28d, fig. 14) generating optical signals of different wavelengths (col. 11, lines 1-14) in an erbium

band of wavelengths between 1530 nm and 1560 nm (col. 17, lines 1-3). Therefore, it would have been obvious to incorporate an optical signal transmission method and an optical signal transmission band of 1530 nm to 1560 nm in the ranges of approximately between 1530 to 1536 nm, or 1538 to 1543 nm, or 1547 to 1553 nm, and/or 1555 to 1561 nm, such as the one of Meli for the signal transmission system of Otsuka to provide different transmission bands for different groups of optical signals.

Regarding claims 32 and 38, Otsuka discloses the operating window comprises sixteen channels (col. 3, lines 19-20 and ch.1 to ch.16 in fig. 7), and the first, second, third, and forth groups of channels each have four channels (ch.1, ch.5, ch.9, ch.4i-3, fig. 7).

Regarding claims 33 and 39, the combination of Otsuka and Meli discloses an optical transmission system as discussed above in claims 31-32 and 37-38. Claims 33 and 39 require similar limitation as recited in claims 31-32 and 37-38 above. Therefore, claims 33 and 39 are rejected for the same reasons as recited in claims 31-32 and 37-38.

10. Claims 2-6, 15 and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Otsuka et al. (US Patent No: 5,841,557) in view of Chraplyvy et al. (US patent No: 5,907,420) and in further view of Meli et al. (US Patent No: 5,946,117).

Regarding claims 2 and 15, the modified transmission system of Otsuka and Chraplyvy further differs from the claimed invention in that Otsuka and Chraplyvy does not disclose an operating window that comprises an erbium band of wavelengths between approximately 1520 nm

and 1561 nm. Meli discloses an optical transmission system of plurality of optical sources (28a, 28b, 28c, 28d, fig. 14) that generate optical signals of different wavelengths (col. 11, lines 1-14) in a band of wavelengths between 1530 nm and 1560 nm (col. 17, lines 1-3). Therefore, it would have been obvious to incorporate an optical signal transmission method and an optical signal transmission band of 1530 nm to 1570 nm such as the one of Meli for the modified signal transmission system of Otsuka and Chraplyvy in order to provide different transmission bands for different groups of optical signals.

Regarding claim 3, Otsuka discloses first subwindow includes a first group of channels (ch. 1, ch. 5, ch. 4i-3, fig. 7), second subwindow includes a second group of channels (ch.3, ch. 7, ch 4i-1, fig. 7), third subwindow includes a third group of channels (ch.2, ch.6, ch.4i-2, fig. 7), and fourth subwindow includes a fourth group of channels (ch.4, ch.8, ch.4i, fig. 7).

Regarding claims 4 and 17, Otsuka discloses a plurality of different signal light transmission sections in plurality of groups for different wavelengths. Meli disclosed sources that generate respective optical transmission signal in a plurality of different wavelengths within a transmission band of 1530 nm to 1560 nm. Therefore, it is obvious to incorporate a first range of wavelengths approximately between 1530 to 1536 nm, a second range of wavelengths approximately between 1538 to 1543 nm, a third range of wavelengths approximately between 1547 to 1553 nm, and a fourth range of wavelengths approximately between 1555 to 1561 nm, for the different groups of signal light transmission sections in the modified transmission system of Otsuka and Chraplyvy.

Regarding claim 5, Otsuka discloses an operating window of sixteen channels (col. 3, lines 19-20 and ch.1 to ch.16 in fig. 7), and subgroups of four channels (ch.1, ch.5, ch.9, ch.4i-3, fig. 7).

Regarding claims 6 and 19, the combination of Otsuka, Chraplyvy and Meli discloses an optical transmission system as discussed above in claims 4 and 17. Claim 6 and 19 require similar limitation as recited in claims 4 and 17 above. Therefore, claims 6 and 19 are rejected for the same reasons as recited in claims 4 and 17.

Regarding claim 18, the combination of Otsuka, Chraplyvy and Meli discloses an optical transmission system as discussed above in claim 17. Otsuka discloses fine multiplexing (col. 33, lines 13-15 and 13-1, fig. 7) of optical signal for a first to fourth groups of channels (fig. 7) to individual channels (p1, p2, p1', p2', fig. 7).

11. Claims 11-12 and 21-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Otsuka et al. (US Patent No: 5,841,557) in view of Chraplyvy et al. (US patent No: 5,907,420) and in further view of Baker (US Patent No: 5,452,124).

Regarding claims 11, 21 and 23, the modified optical signal transmission system of Otsuka and Chraplyvy further differs from the claimed invention in that the modified system of Otsuka and Chraplyvy does not disclose that the first and the second multiplexing units are arranged at first and second sites. However, Baker discloses a unidirectional amplification for bi-directional transmission system using wavelength division multiplexing (figs 2, 8), wherein optical

multiplexers (203, fig. 8) are located at first and second sites (col. 1, lines 61-64). Therefore, it would have been obvious to incorporate the multiplexers of Otsuka at first and second sites, such as the ones in the system of baker in order to have a different multiplex signal transmission configuration depending upon the transmission distance and the wavelength chosen for signal transmission.

Regarding claim 22, Otsuka discloses a plurality of optical transmission paths (fig. 7) that are comprised of zero-dispersion shifted optical fibers (col. 2, lines 65-67, col. 3, lines 1-3).

Regarding claims 12 and 24, Otsuka discloses first to fourth subgroups of optical signals (ch.1 to ch.4i-3 and ch.3 to ch.4i-1 and ch.2 to ch.4i-2 and ch.4 to ch.4i fig. 7); first multiplexing units (13-1 to 13-4, fig. 7); second multiplexing units (13-5, 13-6, 16, fig. 7); and first to fourth optical fibers (p1, p2, p1', p2', fig. 7) arranged in parallel between the multiplexers. Otsuka differs from the claimed invention in that Otsuka does not disclose a first to fourth optical line amplifiers optically coupled along said first to fourth optical fibers. Chraplyvy discloses optical line amplifiers (EDFAs, fig. 2) that are connected to optical fibers for amplification of subgroups of optical signals, as discussed above in claim 1. Therefore, it is obvious to incorporate a first to fourth optical line amplifiers such as the ones in the system Chraplyvy for each optical line in the first to fourth subgroup of optical signals in multiplex system of Otsuka to provide a plurality of different multiplexed amplified optical signals. The combination of Otsuka and Chraplyvy further differs from the claimed invention in that Otsuka and Chraplyvy do not disclose first and third optical fibers and line amplifiers pass optical signals traveling in a first direction and second and

fourth optical fibers and line amplifiers pass optical signals in a second direction opposite to the first direction. Baker discloses a bi-directional transmission system (fig. 8) that comprised of a plurality of different optical signal transmission channels (TX_1, TX_2, fig. 8) located at different sites (A, B, fig. 8), wherein optical signals are multiplexed (203, fig. 8), amplified (401, 403, fig. 8), and transmitted in a first and a second directions. Therefore, it is obvious to a person of ordinary skill in the art to multiplex optical signals traveling in a first direction or to demultiplex optical signals in a second direction opposite of the first direction, such as the ones of Baker in the modified communication system of Otsuka and Chraplyvy to provide a bi-directional optical multiplex transmission system.

Regarding claim 25, Baker discloses multiplexing (203, fig. 8) optical signals in the set of multiple channels (TX_1, TX_2, fig. 8) into a first subgroup of optical signals and demultiplexing (201, fig. 8) optical signals in the set of multiple channels into a second subgroup of optical signals (RX_1, RX_2, fig. 8). Therefore, it is obvious to incorporate a method of multiplexing and demultiplexing such as the one of Baker in the system of Otsuka for multiplexing optical signals into a first and third subgroup of optical signals and demultiplexing the optical signals into a second and fourth subgroups of optical signals in order to transmit and receive optical signals of different wavelengths at one site in a communication system.

12. Claims 13, 26, and 28, are rejected under 35 U.S.C. 103(a) as being unpatentable over Otsuka et al. (US Patent No: 5,841,557) in view of Chraplyvy et al. (US patent No: 5,907,420) and in further view of Onaka et al. (US Patent No: 5,886,804).

Regarding claims 13, 26, and 28, the modified system of Otsuka and Chraplyvy further differs from the claimed invention in that the modified system of Otsuka and Chraplyvy does not disclose that optical line amplifier includes a dispersion compensating device. Onaka discloses an optical multiplex transmission system (fig. 1) that is comprised of a plurality of optical signals (col. 2, lines 12-13 and fig. 1) that are multiplexed (3, fig. 1) and amplified (6, fig. 1), wherein the optical line amplifier includes a dispersion compensating fiber (col. 2, line 42-46 and 8, fig. 1). Therefore, it would have been obvious to provide line amplifiers with dispersion compensation fibers such as the one of Onaka in the modified line amplification of Otsuka and Chraplyvy in order to provide dispersion compensation for different lines in different subgroups of optical signals to further increase the range of transmission speed and transmission distance.

13. Applicant's arguments filed 03/21/2001 have been fully considered but they are not persuasive.

Otsuka discloses a WDM system (fig. 15) for multiplexing optical signals (col. 7, lines 10-14, 19-22) in a set of multiple channels (ch.1 to ch.2i(p), fig. 15) within an operating window (odd and even numbered channels, fig. 15), comprising of coarse (13-7, fig. 15), and fine (13-1, 13-2, 13-3, 13-4, 13-5, fig. 15) WDM units, wherein the coarse WDM unit (13-7, fig. 15)

multiplexes the optical signals into subgroups of optical signals (p1, p2, fig. 15) in corresponding subwindow (odd numbered channels, fig. 15) within an operating window (odd and even numbered channels, fig. 15), and the fine WDM units (13-1, 13-2, 13-3, 13-4, 13-5, fig. 15) multiplexes the optical signals within a respective subgroup of optical signals (12N-1, 12p-1 and 12w-(2i-1), 12p-(2i-1), fig. 15) into individual channels (p1, fig. 15) within a corresponding subwindow (odd numbered channels, fig. 15). Otsuka discloses the plurality of signal lights are divided into groups (col. 9, lines 5-13) that are further combined into wavelength division multiplexed signals (col. 9, lines 13-15), by wave combiners which combines or wavelength multiplexes the plurality of signal lights (col. 7, lines 19-22).

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mohammad Sedighian whose telephone number is (703) 308-9063. The examiner can normally be reached on 9:00 AM to 5:00 PM from Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached on (703) 305-4729. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.

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